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Penetrating Head Injury in a Child with Hemorrhage in the Bilateral Basal Ganglia —Case Report—

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Abstract

A 3 year-old boy sustained penetrating head injury with hemorrhages in the bilateral basal ganglia is presented. Intracerebral hemorrhages of traumatic origin are quite rare in children, especially in the basal ganglia. It is postulated that hemorrhages occurred from leakage of the lenticulostriate arteries due to the shear strain of the head following head injury.

Introduction

Traumatic intracerebral hemorrhages in the region of the basal ganglia are apparently limited not only in adults but in children^{1),2),6),7)}. MCLAURIN and McBRIDE⁸⁾ emphasized in the basal ganglions, where hypertensive intracerebral hemorrhage are so frequent.

Case Report

This 3 year-old boy was transferred to our hospital shortly after the head injury on July 1, 1978, when he was playing along the railway line, bowed by the passing train and hit his left temporo-parietal region.

On examination at the admission, his conscious level was semicomatose with anisocoria (right : 2.5mm, left : 3.5mm) and light reaction was absent bilaterally. Right eye was deviated into the inner side without positive findings in the fundus. Bilateral deep tendon reflexes were exaggerated moderately without weakness of extremities. No pathological reflexes, no rhinorrhagia and no otorrhagia were

Key words : Head injury, Intracerebral Hematoma, Basal ganglia.

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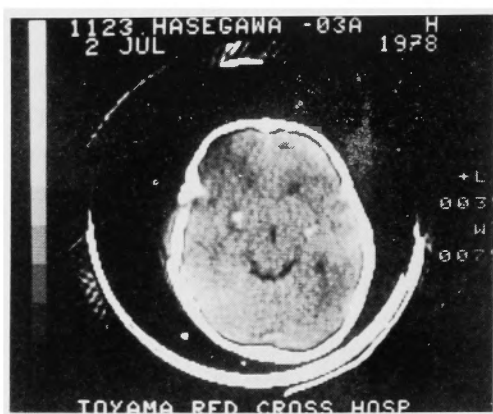


Fig. 1 Computerized tomography (CT) scan taken 1 day after operation



Fig. 2 CT scan taken 6 days after operation

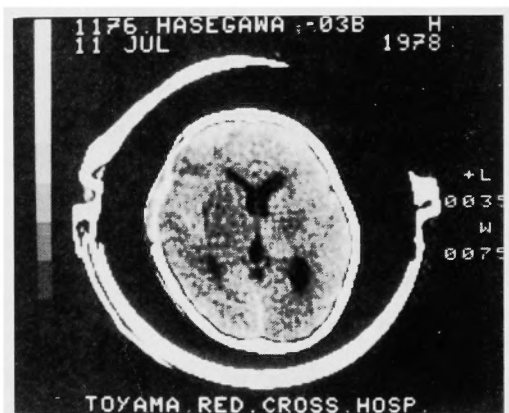


Fig. 3 CT scan taken 10 days after operation

recognized. An open wound, about 7cm in length, on the left temporal region was revealed.

Emergency operation, including the debridement of the cerebral contusion, removal of the bone fragments and external decompression was undergone immediately.

Computerized tomography (CT) scans, 1st day postoperatively, showed slight shift of the midline structures from left to right and high density areas in the bilateral basal ganglia suspected hemorrhages (Fig. 1). CT scans, 6th postoperatively, revealed that the high density area in the right basal ganglia changed into the low density at the level of the pineal body and around the high density area in the left basal ganglia appeared wide low density area. A CT scan, 10th day after the operation, demonstrated the disappearing of the high density areas in the bilateral basal ganglia into the low density which confirmed the hemorrhages.

Four vessels angiography by the Seldinger technique was carried out postoperatively and no positive findings were revealed.

Discussion

Since the report of BOLLINGER, 1891, on "late traumatic apoplexy", various reviews³⁾ on the etiology of intracerebral hemorrhage due to the head injury have been reported but definite theory has not still established.

It is definite that traumatic intracerebral hemorrhages in children are unusual, whereas some cases^{9),10)} due to the bleeding factors or the cerebro-vascular disorders have been reported. INGRAHAM and MATSON⁴⁾ did not find a single case in a series of 1330 cases of head injury requiring hospitalization. JAMIESON et al⁵⁾ found only one case of traumatic intracerebral hematoma in childhood out of 63 surgically treated cases. MAKINO et al⁷⁾ also reported only one case of intracerebral hematoma out of 82 cases of traumatic intracranial hematoma in children in 10 years. They emphasize that intracerebral hemorrhages due to apparent head injury cannot happen to occur in children anatomically and physiologically because the inner surface of the skull in childhood is smooth and myelinizations of the brain are still immature. So, it is necessary to examine the bleeding factors and cerebro-vascular disorders when we treat the children with spontaneous intracerebral hemorrhages whose causes unknown.

Some cases of traumatic intracerebral hemorrhages reported in children are almost adjacent type which are a part of a severe contusion whereas the central type in which hemorrhages occur primarily in the centrum of the lobe has not been reported.

In our case, traumatic intracerebral hemorrhages occurred in the bilateral basal ganglia in a 3 year-old boy without any cerebro-vascular disorders or bleeding factors. Its cause would be difficult to explain clearly but it is postulated that hemorrhages in the bilateral basal ganglia happened from leakage of the lenticulostriate arteries due to the shear strain of the head.

CT scan in our case easily confirmed the diagnosis of the hemorrhages in the bilateral basal ganglia in a child and consequently cases like ours would be expected in future.

Acknowledgment

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和文抄録

両側基底核部出血を来した開放性脳損傷の小児例

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小児における脳内血腫は出血性素因によるもの、脳内血管の異常によるものは種々報告されているが外傷性のものはまれである。今回我々は開放性脳損傷に伴い、両側基底核部出血をきたした小児例を経験したので報告した。この症例において術後の脳血管撮影で異

常なく又、血液凝固因子においても何ら陽性所見はなく、外傷により両側基底核部に出血を起こしたものである。その発生機序に関しては、外傷により基底核部にズレが生じ、そのためにレンズ核線状体動脈が破綻したためと推測した。